

# MARSHALL STAR

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## Statement by the President on the Passing of Sally Ride

Michelle and I were deeply saddened to hear about the passing of Sally Ride. As the first American woman to travel into space, Sally was a national hero and a powerful role model. She inspired generations of young girls to reach for the stars and later fought tirelessly to help them get there by advocating for a greater focus on science and math in our schools. Sally's life showed us that there are no limits to what we can achieve and I have no doubt that her legacy will endure for years to come. Our thoughts and prayers go out to Sally's family and friends.

President Barack Obama

**Image right: On June 18, 1983, Sally Ride**

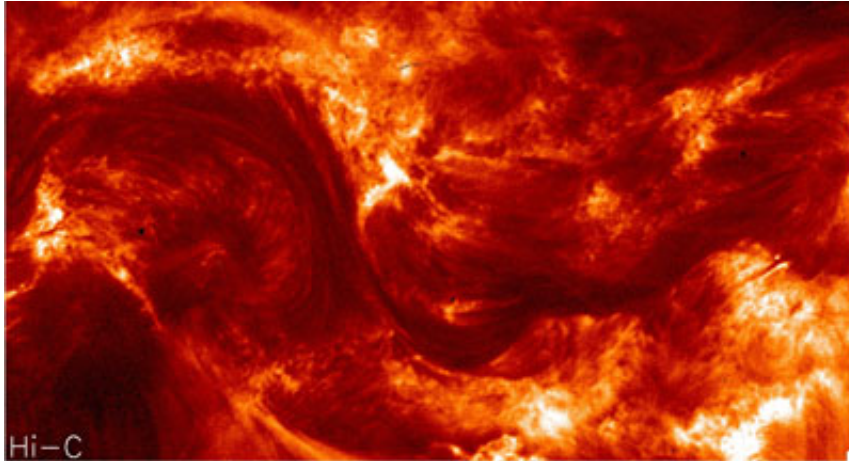


*made history, becoming the first American woman to go to space. Ride, right, floats on space shuttle Challenger's mid-deck during her historic STS-7 flight in 1983. She passed away July 23 at age 61 after a 17-month battle with pancreatic cancer. To read NASA's condolences about Ride's passing, visit [here](#). (NASA)*

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## NASA Telescope Captures Sharpest Images of Sun's Corona

*NASA news release*



A telescope launched July 11 aboard a NASA sounding rocket has captured the highest-resolution images ever taken of the sun's million-degree atmosphere called the corona. The clarity of the images can help scientists better understand the behavior of the solar atmosphere and its impacts on Earth's space environment.

***Image left: Hi-C has captured the highest resolution images ever taken of the corona of the sun in the extreme ultraviolet wavelength. (NASA)***

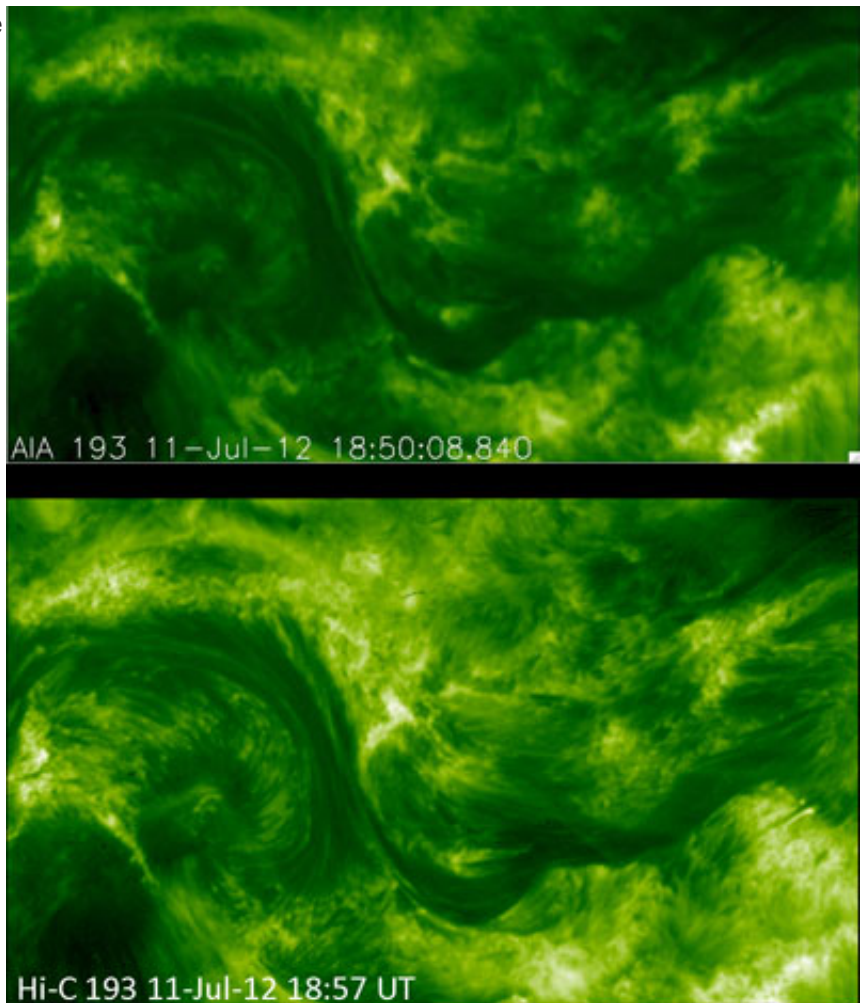
"These revolutionary images of the sun demonstrate the key aspects of NASA's sounding rocket program, namely the training of the next generation of principal investigators, the development of new space technologies, and scientific advancements," said Barbara Giles, director for NASA's Heliophysics Division at NASA Headquarters.

Launched from White Sands Missile Range, the 58-foot-tall sounding rocket carried NASA's High Resolution Coronal Imager, or Hi-C, telescope. Weighing 464 pounds, the 10-foot-long payload took 165 images during its brief 620-second flight. The telescope focused on a large active region on the sun with some images revealing the dynamic structure of the solar atmosphere in fine detail. These images were taken in the extreme ultraviolet wavelength. This higher energy wavelength of light is optimal for viewing the hot solar corona.

**Image right: Shown in green to enhance detail, these Hi-C images reveal detailed tangles of magnetic field. (NASA)**

"We have an exceptional instrument and launched at the right time," said Jonathan Cirtain, senior heliophysicist at the Marshall Space Flight Center. "Because of the intense solar activity we're seeing right now, we were able to clearly focus on a sizeable, active sunspot and achieve our imaging goals."

The telescope acquired data at a rate of roughly one image every 5 seconds. Its resolution is approximately five times more detailed than the Atmospheric Imaging Assembly, or AIA, instrument flying aboard NASA's Solar Dynamics Observatory, known also as SDO. For comparison, AIA can see structures on the sun's surface with the clarity of approximately 675 miles and observes the sun in 10 wavelengths of light. Hi-C can resolve features down to roughly 135 miles, but observed the sun in just one wavelength of light.



The high-resolution images were made possible because of a set of innovations on Hi-C's optics array. Hi-C's mirrors are approximately 9.5 inches across, roughly the same size as the SDO instrument's. The telescope includes some of the finest mirrors ever made for space-based instrumentation. The increase in resolution of the images captured by Hi-C is similar to making the transition in television viewing from a cathode ray tube TV to high definition TV.

**Image left: Members of NASA's Hi-C team prepare to recover the one-of-a-kind telescope at White Sands Missile Range following the sounding rocket's successful**

**launch. From left are Eduardo Langman, telemetry engineer, Orbital Sciences; Ken McCracken, mechanical engineer, Smithsonian Astrophysical Observatory; and Jonathan Cirtain, principal investigator, and Dyana Beabout, software engineer, both from the Marshall Space Flight Center. (NASA)**



Initially developed at Marshall, the final mirror configuration was completed with inputs from partners at the Smithsonian Astrophysical Observatory, or SAO, in Cambridge, Mass., and a new manufacturing technique developed in coordination with L-3Com/Tinsley Laboratories of Richmond, Calif.

The high-quality optics were aligned to determine the spacing between the optics and the tilt of the mirror with extreme accuracy. Scientists and engineers from Marshall, SAO and the University of Alabama in Huntsville worked to complete alignment of the mirrors, maintaining optic spacing to within a few 10-thousandths of an inch.

***Image right: Hi-C was successfully launched July 11 on a Black Brant sounding rocket from the White Sands Missile Range. (NASA)***



NASA's suborbital sounding rockets provide low-cost means to conduct space science and studies of Earth's upper atmosphere. In addition, they have proven to be a valuable test bed for new technologies for future satellites or probes to other planets.

Launched in February 2010, SDO is an advanced spacecraft studying the sun and its dynamic behavior. The spacecraft provides images with clarity 10 times better than high-definition television and provides more comprehensive science data faster than any solar observing spacecraft in history.

Partners associated with the development of the Hi-C telescope also include Lockheed Martin's Solar Astrophysical Laboratory in Palo Alto, Calif.; the University of Central Lancashire in Lancashire, England; and the Lebedev Physical Institute of the Russian Academy of Sciences in Moscow.

Watch a video of Hi-C's observations of the sun [here](#).

For more information about SDO, visit <http://www.nasa.gov/sdo>.

For more information about NASA's sounding rocket program, visit <http://sites.wff.nasa.gov/code810/>.

For more information about Hi-C, visit <http://go.nasa.gov/NBwmf6>.

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## **HEROES' Heroes: Marshall, Goddard Team Tackles Award-winning Flight Project**

*By Rick Smith*



Call Jessica Gaskin and Steve Christe "heroes," and they'll laugh. But these enterprising NASA researchers -- the former at the [Marshall Space Flight Center](#), the latter at the [Goddard Space Flight Center](#) -- are leading a heroic undertaking: They're co-principal investigators on a new project to prepare, modify, test and launch a sophisticated, balloon-borne X-ray telescope designed to expand knowledge in not just one field of [extraplanetary science](#) but two. Few members of the team have participated in a flight mission. And they've got just 12 months to get airborne.

***Image left: A balloon-borne gondola bearing NASA's original HERO science mission lands safely in a Kansas field in 2005. The new HEROES flight project builds on that***

***successful mission. (NASA/MSFC)***

But NASA has faith in the team's "High Energy Replicated Optics to Explore the Sun" project, or HEROES: It recently was selected for the agency's prestigious Hands-On Project Experience, or [HOPE](#), training award.

First presented in 2009, the honor promotes achievement and accelerates career advancement among scientists and engineers with no previous flight-project experience. Eligibility extends to any NASA civil-service researchers developing in-house payloads that can be flown aboard available, low-cost NASA and commercial vehicles. The awards are presented by the [NASA Academy of Program/Project & Engineering Leadership](#), in partnership with NASA's Science Mission Directorate, [Office of the Chief Engineer](#) and [Office of the Chief Technologist](#) in Washington.

One of only two projects selected for the 2012 HOPE award, HEROES is a joint effort between Marshall and Goddard science teams to fly a powerful X-ray telescope on a two-day mission in Earth's stratosphere, some 25 miles up. It's slated to launch in the fall of 2013, from the Fort Sumner, N.M., test site managed by the [Columbia Scientific Balloon Facility](#) of Palestine, Texas.

HEROES' name is a bit deceptive; it doesn't quite cover the breadth of the project's goals. During the day, the balloon-lofted payload will indeed explore the sun, studying powerful solar flares to give NASA solar scientists new insight into the way our star's magnetic energy functions.

At night, however, the telescope's eye will turn outward to other stars and celestial phenomena such as the Crab Nebula -- targets of keen interest to NASA astrophysicists studying the origins of the cosmos and the lifecycle of stars and galaxies like our own.

Such studies provided the foundation for the new project, which builds on Marshall's successful [High Energy Replicated Optics](#), or HERO, first flown to the upper atmosphere in 2001 to detect distant X-ray sources in space. HEROES will significantly update the original with a number of robust modifications, most notably an innovative targeting technology dubbed the Solar Aspect System.

***Image right: Marshall Center research scientist Jessica Gaskin is co-principal investigator for NASA's HEROES project. (NASA/MSFC)***



Developed at the Goddard Center, this sophisticated pointing technology will enable scientists to aim HEROES with a high degree of precision, targeting specific points on the sun to obtain high-resolution images and spectroscopic data. The goal? To hone in on low-energy X-rays signifying the start of particle acceleration in the solar corona -- the trigger for the process that culminates in the massive outbursts of energy we see as solar flares.

"We're asking a very basic question here: How does energy get released in the solar corona?" Christie says. "It's our goal to add to our understanding of how the sun works, so we're going where the action is."

When that solar action wanes at sunset, HEROES will use its star camera to target and document additional X-ray sources overnight, gazing deep into distant galaxies, and studying the spatial and spectral emissions of the Crab, a [pulsar wind nebula](#) caused by a supernova first detected from Earth in 1054.

### **Where Heliophysics and Astrophysics Meet**

Gaskin and Christie are proud of the dual purpose of their project, which unites NASA's heliophysics and astrophysics divisions -- separate sciences often pursuing similar goals.

"We see a lot of the same processes everywhere we look in space, from the sun to the farthest points in the known universe," Christie says. "The sun is the perfect laboratory to study so many of the processes we see in action around the cosmos. At the same time, studying the birth, life and death of stars millions of light-years away helps us better understand the lifecycle and behavior of our own turbulent star."



Gaskin concurs. "By successfully integrating our science goals and working together to develop and fly the instrument that will achieve them, we hope to demonstrate how NASA can cut costs, combine resources and dramatically improve the return on its investment across all the sciences," she says.

***Image left: Goddard Center researcher and HEROES' co-principal investigator Steve Christe is leading work on the project's innovative targeting technology, the Solar Aspect System. (NASA/GSFC)***

The co-investigators hope the team's efforts eventually will lead to a larger-scale flight experiment, but right now they're staying focused on the tasks at hand. The team is setting up shop in the high-bay facility in

Building 4649 at Marshall, assessing mission requirements and specifications for HEROES' first major milestone: a System Requirements Review set for August. Gaskin, managing the work at Marshall, communicates regularly by phone and email with Christe, who is overseeing the Solar Aspect System testing at Goddard. The team's energy is palpable, and no wonder.

"It's exciting to put together a project with such a relatively small price tag and such big ambitions," Gaskin says. "It's an opportunity to deliver big science on a budget."

Then she and her partner get back to heroic business.

*Smith, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.*

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## **A Part of NASA Goes to Columbus State University's Coca-Cola Space Science Center**

*On July 20, a piece of history was donated by NASA to the Columbus State University's Coca-Cola Space Science Center in Columbus, Ga. Representatives from the science center received space shuttle main engine nozzle number 5002 from Marshall Space Flight Center personnel at the Propulsion Research Development Laboratory, Building 4205. From left are Steve Cash, director of the Safety & Mission Assurance Directorate and former director of the Shuttle Propulsion Office; Dorothy Rasco, manager of Space Shuttle Transition & Retirement at the Johnson Space Center; Shawn Cruzen, director of the Coca-Cola Space Science Center and a professor of astronomy at Columbus State University; and Roy Malone, manager of the Shuttle-Ares Transition Office at the Marshall*







The space shuttle main engine nozzle is loaded onto the back of a truck before it heads to its new home. This nozzle has flown to space numerous times on four shuttles -- Columbia, Discovery, Endeavour and Atlantis. On Feb. 3, 1994, it carried Charles Bolden, commander of the STS-60 mission, aboard space shuttle Discovery. Today Bolden is NASA administrator. That mission also marked the first flight of a Russian cosmonaut to fly in a U.S. shuttle. For more information about the Coca-Cola Space Science Center, visit [here](#). (NASA/MSFC/Emmett Given)

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#### Farewell Reception for Marshall Center Acting Director Gene Goldman to be Held July 27

A farewell reception honoring Gene Goldman, Marshall Space Flight Center acting director, will be held from 1-2:30 p.m., July 27, in Building 4200, Room P-110. All Marshall team members are invited to attend and extend appreciation to Goldman for his 22 years of dedicated service, and to wish him well in his new endeavor.

**Image right: Gene Goldman (NASA/MSFC)**

Light refreshments will be served.



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**Chris Crumbly Reassigned to Manager of Advanced Development Office; Roy Malone Reassigned to Michoud Director**



Chris Crumbly has been reassigned from his current position as Michoud Assembly Facility director to manager of the Advanced Development Office in the Space Launch System Program at the Marshall Space Flight Center. Upon Crumbly's reassignment, Roy Malone, current manager of the Shuttle-Ares Transition Office, will be reassigned to the position of Michoud director. These reassignments will be effective July 29.

***Image left: Chris Crumbly (NASA/MSFC)***

Crumbly has been selected manager of the Advanced Development Office due to his extensive professional engineering and scientific knowledge, as well as significant experience in technical management, design, development and integration of complex and

advanced spaceflight systems. He will be responsible for the identification and prioritization of advanced development tasks, which include leading the procurement and selection processes necessary to evolve the SLS vehicle to meet mission requirements. He also will be responsible for the identification and maturation of activities that will reduce program, technical and schedule risks, and enhance the affordability of the launch vehicle for future exploration missions. Crumbly will manage the Advanced Booster Engineering Demonstration and Risk Reduction, or ABEDRR, efforts and advanced development tasks with academia, industry and NASA/government partnerships applicable to the SLS Program. Having served as chair of the ABEDRR Source Evaluation Board, Crumbly is uniquely qualified to oversee this activity.

Malone's extensive experience in near- and long-term strategic planning, systems engineering, safety and quality engineering and assurance, technical and institutional expertise, and program and project support across all levels of the agency makes him ideally suited to serve as Michoud director. Malone will oversee and manage the multi-tenant manufacturing facility where development of NASA's new SLS and Orion spacecraft are under way. He will be responsible for further marketing the facility's capabilities to NASA, as well as government, academic and private sector entities to build a broader business base. Currently the facility serves as home to several government and corporate entities, including the Lockheed Martin Corp., which is building spaceflight hardware for the Orion crew exploration vehicle, the successor to the space shuttle. Michoud also houses the National Center for



Advanced Manufacturing, a partnership among NASA, the state of Louisiana and the University of New Orleans, providing research, advanced manufacturing technology, and material evaluation techniques for use in aerospace and commercial markets.

**Image right: Roy Malone (NASA/MSFC)**

Malone will continue to oversee the Shuttle-Ares Transition Office until all transition and retirement activities are complete. In the interim, Robert Champion, Michoud deputy director, will oversee the facility's day-to-day operations.

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### The face of mission success at Marshall is: Lakiesha Vessel Hawkins



**Team lead of dynamic loads and data analysis in the Structural & Dynamics Analysis Branch**

**Image left: Lakiesha Vessel Hawkins (NASA/MSFC/Emmett Given)**

- **Organization:** Engineering Directorate
- **Years at Marshall:** Four-and-a-half years
- **Education:** Bachelor's degree in mechanical engineering with coursework in propulsion systems, Florida A&M University-Florida State University College of Engineering in Tallahassee, Fla.; master's degree in engineering management, University of South Florida in Tampa
- **Responsibilities:** As team lead, I provide guidance and support to a diverse group of analysts, each of whom is recognized as an expert in their respective disciplines. Our team performs structural dynamic, loads, vibroacoustic, and rotordynamic analyses, and analyzes high-speed vibration data for engine and propulsion system components. The team is often called to support other departments within the Marshall Space Flight Center in addition to our own, other NASA centers and even other agencies with challenging problems industry is unable to resolve. Unique examples include probabilistic methods for assessing the risk of component failure in engine tests and real-time, high-speed engine health monitoring.
- **How does your work at Marshall support the agency's goals?** The team directly supports the [Human Exploration and Operations Mission Directorate](#) at Headquarters through insight into the [Space Launch System](#) core stage, booster and engine development. The team performs loads, structural dynamic and rotordynamic analyses of engines such as the J-2X and RS-25 engines, as well as analysis of data gathered from engine hot-fire and component-level tests. The team also formulates vibration, acoustic and shock design, test criteria and random loads for propulsion system components, and monitors associated tests.
- **Have you found any unique, cost-saving or collaborative processes or innovations in the last year?** I led a hot-gas component test effort used to develop an alternate fatigue acceptance plan for the J-2X fuel turbine nozzle, which did not meet analytical [Low Cycle Fatigue requirements](#). The test series was successfully completed through

collaboration between analysts, component teams, manufacturing, inspection, test area personnel and the prime contractor. The results of this testing and analysis were used to define the level of inspection on development engine test units. Repurposing an existing gas generator test rig, initially configured for dynamic stability objectives, provided a cost savings to the project. Additionally, confidence built by the crack initiation, growth rate and arrest data eliminated the need to obtain this data using the engine, resulting in significant cost and schedule savings to the J-2X test program. Final design acceptance logic will ultimately be developed utilizing this test and analytical data.

- **Safety remains Job One for NASA; how do you strive to live by that code?** I strive to live by this code by focusing on the reason safety and mission assurance are so important at NASA. I appreciate having met astronauts through the Space Flight Awareness program, who reminded me that they simply wanted to accomplish the goal and return home to their families. Embracing safety as a part of our culture leads me to attend better to detail in my own work, and probe into the assumptions of solutions presented to me. I am more conscientious about the choices I make throughout the day, and am more willing to speak up for my colleagues' safety as well as my own so we can return home safely to our families, too.
- **What do you hope to accomplish in your role this year?** I hope to renew our focus on team interfaces, so in addition to being known for our technical expertise, we set the bar for being nimble and responsive. We are working to develop tools to more effectively assess development risk, and provide cursory assessments of loads and environments to support development studies. We are focusing on accountability through re-evaluation of our quality control processes, looking for ways to improve communication within the team, while strengthening our interfaces across the department, with our project interfaces and with outside partners.
- **What is the biggest challenge you face?** The biggest challenge I face is how best to help my team adapt to providing technically sufficient analysis products in this new "post-shuttle" era. This new environment is significantly leaner and will require assessment of propulsion designs with fewer traditional hardware and testing opportunities for design acceptance. We're developing more agile tools and methodologies to ensure the SLS and other new programs are successful while being sensitive to project constraints. For instance, a risk-based assessment allows us to strategically determine when developing a new model is appropriate, versus utilizing database tools developed to capitalize on past program experience.
- **What is your favorite memory at Marshall?** My favorite memory at Marshall occurred before I became an employee. I began my career developing alternate turbomachinery for the space shuttle main engines as a member of the engine prime contractor team. When faced with a challenging issue, it was significant to me that my NASA customer engaged as a partner committed to the success of the project. Having an informed customer allowed us to tackle development, certification and flight challenges together as a fully integrated team. Our solutions were stronger because of Marshall's expertise. This first and lasting impression is the reason I felt a connection to the Marshall team long before I wore the NASA/MSFC badge. Our primary focus has always been on achieving mission success in whatever manner that goal is best realized.

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**Dexter Brooks, Director of Federal Sector Programs, Shares With Marshall How Unconscious Bias Shapes Our Thoughts**



*"When we automatically attribute the stereotypical beliefs about a group to an individual, we have engaged in unconscious association," said Dexter Brooks, right, to a full house in Morris Auditorium at the Marshall Space Flight Center on July 18. Brooks, director of the Federal Sector Programs within the U.S. Equal Employment Opportunity Commission in the Office of Federal Operations, held a session titled "Unconscious Bias" with more than 350 team members as part of the center's initiative to improve diversity and inclusion. He spoke about how unconscious association is common and natural, and is the result of cultural knowledge that we all develop. Brooks discussed studies that show implicit bias could affect decisions such as employment. He shared the importance of being inclusive, open-minded and respectful in one's attitude toward others. During his Marshall visit, Brooks also facilitated a discussion with more than 100 senior center managers about how the diversity and inclusion initiative benefits NASA, and how unconscious bias impacts an organization. The event was organized by the Office of Human Capital. (NASA/MSFC/Fred Deaton)*



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## **Solar Gator Groomer Runs on Sunshine** *Submitted by the NASA Marshall Exchange*



What do you get when you join together a battery-powered utility vehicle, a high-efficiency rugged solar panel, an electrically operated sports field groomer and a sky full of sunshine? How about one lean, green, solar-powered field machine – capable of maintaining the Marshall Space Flight Center's softball, football and soccer fields using nothing more than the freely available energy of the sun.

***Image left: Jay Hollenbeck, a mechanical engineer in the Facilities Management Office and the field maintenance manager for the MARS Softball Club, prepares the field for the next game using the new Solar Gator Groomer. A legacy Saturn-1B can be***

***seen in the background. (NASA/MSFC/Emmett Given)***

A unique collaboration between the Marshall Center, John Deere Corp., TriGreen Equipment LLC, Unconquered Sun Solar Technologies Inc., Wiedmann Bros Distributing Co., Heying Company, and the NASA Marshall Exchange and its intramural sports leagues has created what's believed to be the world's first Solar Gator Groomer. This collaboration -- led by the Exchange -- sought to integrate several elements that support renewable energy into a unique and novel utility vehicle capable of both versatility and function.

"We read and hear a lot about renewable resources -- going green," said Edwin Jones, operations manager of the Marshall Exchange. "So when faced with problems, like the demise of our Softball Club's old garden tractor used to pull a drag mat to maintain our sports fields, we ask ourselves -- is there a green solution? You'd be surprised by how many different, innovative ideas people offer, and then at how willing people, organizations and companies are to work together to make green solutions possible."

The Solar Gator Groomer has widespread commercial potential. The rugged, high-efficiency solar panel recharges eight, six-volt batteries that power the Gator's 48-volt DC power train. The infield groomer is an accessory towed behind the Solar Gator that receives power to lower and raise its levelers and chisels from the batteries in the Gator through a 48- to 12-volt power converter. Any application requiring an intermittent-use utility vehicle, such as found in many agricultural, landscaping and sports park uses, is a perfect match for the Solar Gator, since a few hours of sunshine easily replenish the power used by the Gator each day.

Marshall Center contributors included the Office of MSFC Center Chief Technologist, the Environmental Engineering & Occupational Health Office, NASA recycling, the NASA Marshall Exchange and the MARS Softball Club.

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## **U.S. Space & Rocket Center Now Offering Marshall Center Bus Tours**

By Rick Smith

The [Marshall Space Flight Center](#) has thrown open many of its doors to the public, sharing an inside look at the work of the nation's space program via a regular series of bus tours conducted by the U.S. Space & Rocket Center in Huntsville.

"We're excited to partner with the [U.S. Space & Rocket Center](#) for this revealing tour of our world-class facilities," said Marshall Center Acting Director Gene Goldman. "Marshall is tasked with developing some of NASA's most critical science, engineering and space exploration projects and missions -- helping to extend a human presence into the solar system, unlock the secrets of the cosmos, and improve and protect lives here on Earth.

"Demonstrating the innovations and intricacies of that work to visitors from all over the nation is a pleasure and a privilege for the Marshall team," he added.

Tours visit a number of key Marshall laboratories and test sites, including many involved in development of NASA's [Space Launch System](#), the advanced, heavy-lift launch vehicle that will enable new exploration missions beyond low-Earth orbit. The Marshall Center is leading development of the Space Launch System for NASA -- a national endeavor incorporating the work of NASA field centers and industry partner facilities across the country.

Bus tours also introduce visitors to historic sites where early American rockets were tested; state-of-the-art facilities where NASA develops and tests powerful new flight vehicles, space systems, uncrewed science probes and space imagers; and the International Space Station [Payload Operations Center](#) -- where Marshall personnel are in contact around the clock with station crews, orchestrating science experiments and maintaining communications between astronauts and researchers around the world.

"It is our honor to be Marshall's Visitor Center and to once again open the doors to their groundbreaking work," said Dr. Deborah Barnhart, chief executive officer and executive director of the U.S. Space & Rocket Center.

The Marshall Center bus tours are available to all visitors to the U.S. Space & Rocket Center, situated at One Tranquility Base off Interstate 565 in Huntsville. Space & Rocket Center hours, directions and more information are available [here](#).

*Smith, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.*

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## Submissions Sought for Team Redstone's Women's Equality Day Essay, Display Contests

In celebration of Women's Equality Day on Aug. 26, Team Redstone -- which includes the Marshall Space Flight Center and U.S. Army organizations on Redstone Arsenal -- is holding its annual essay and display contests.

Essays must pertain to this year's theme, "Celebrating Women's Right to Vote." It should be two pages, double-spaced. Essays must be emailed by 5 p.m., Aug. 8, to Jason Cundiff at [jason.cundiff@us.army.mil](mailto:jason.cundiff@us.army.mil), or Kimley Pierce at [kimley.l.pierce@conus.army.mil](mailto:kimley.l.pierce@conus.army.mil). For more information, call Cundiff at 256-313-0993 or 256-755-2569, or Pierce at 256-876-0023.

The display contest also should illustrate the theme. Contact Lance Green at [lance.j.green@us.army.mil](mailto:lance.j.green@us.army.mil) or Pierce for information about contest entry and location of the display. For additional information, call Cundiff or Pierce.

Judging will be held Aug. 9. Awards for the contests will be presented at Team Redstone's Women's Equality Day Observance Program at 10 a.m., Aug. 14, at Bob Jones Auditorium, Sparkman Center, Building 5304. For rules and more information, Marshall team members can visit [here](#) on ExplorNet.

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## NASA History Now Available on iTunes U

*NASA news release*

Marking the 43rd anniversary of the Apollo 11 moon landing, NASA has added an extensive collection of historical video, audio, photographs and documents to iTunes U.

iTunes U is a platform for making educational resources available to a wide audience through the iTunes Store.

NASA's History Program Office iTunes U site currently contains about 300 items that represent a broad sweep of NASA history related to important moments, activities and figures in NASA history. The site's content is free to download.

"New materials will continue to be uploaded as we expand the coverage both in depth and breadth," said Bill Barry, NASA's chief historian. "We're thrilled to educate people on NASA's rich history and are open to user suggestions and requests."

The site includes Apollo program material with a collection of items for each of the Apollo missions, as well as a special Politics of Apollo collection of key documents related to the U.S. lunar program.

The site also features eBooks from the NASA History Series. Available titles include reader favorites such as Asif Siddiqi's "Challenge to Apollo," the "Exploring the Unknown" series of documentary histories, and all four volumes of Boris Chertok's "Rockets and People."

Other agency programs using iTunes U include NASA's Academy of Program, Project and Engineering Leadership, NASA Spinoffs from the Office of the Chief Technologist and collections from NASA's Jet Propulsion Laboratory. To view all of NASA's iTunes U sites and download material, visit <http://www.nasa.gov/connect/itunesu.html>.

To view Apollo materials not found on iTunes U, visit NASA's history website at <http://history.nasa.gov/apollo.html>.

For additional interactive features and podcasts about NASA, visit <http://www.nasa.gov/multimedia>.

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## Obituaries

**Inoma Pal Willmore**, 84, of Arab died June 17. He retired from the Marshall Center in 1983 as a model maker.

**Joseph Ferrell**, 80, of Huntsville died June 30. He retired from the Marshall Center in 1988 as a personnel management specialist.

**Audrey Juanita Bennett Moore**, 93, of Huntsville died July 7. She retired in 1985 as a secretary.

**Daniel John Roets**, 40, of Huntsville died July 20. He was a contract specialist in the Space Transportation Support Office in the Office of Procurement. He is survived by his wife, Amy Roets.

**Find this article at:**

<http://www.nasa.gov/centers/marshall/about/star/index.html>